REMARKS/ARGUMENTS

This communication responds to the Final Office Action of March 2, 2009, in which claims 51-52 are pending.

Claim Objections

Claim 51 was objected to because of informalities, which have now been corrected. Withdrawal of this objection is therefore respectfully requested.

Claim Rejections Under 35 U.S.C. §101

Claims 51-52 were rejected under 35 U.S.C. § 101 as non-statutory since they are not requisitely tied to another statutory class and they do not requisitely transform underlying subject matter to a different state or thing.

Applicants disagree that these claims are not tied to a particular apparatus (""A *computer-implemented* . . . method, comprising *a computer performing the follow*:"). However, for purposes of expediting this application, which has already been pending for more than eight years, claim 51 has been amended to clarify even further that the "computer-implemented method" is indeed tied to a particular apparatus, namely a computer that runs a software application, a database and electronic display, such that the claimed invention is explicitly tied to another statutory class (a computer or "machine"). Support for the use of a computer-implemented software application is provided, *e.g.*, on page 10, lines 9-11, of the specification, and the computer-implemented nature of the invention is apparent from the numerous references in the specification to compiling and processing of claim data and displaying information on electronic display screens depicted in FIGS. 2-9.

The requirements of §101 are met by the pending claims, and therefore withdrawal of this rejection is respectfully requested.

Claim Rejections Under 35 U.S.C. §112

Claim 52 was rejected under 35 U.S.C. § 112 as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time of filing, had possession of the claimed invention. However,

the potential option of filtering the displayed subset members by "product" is illustrated in FIG. 2, even though that particular option is not active in the embodiment illustrated in FIG. 2. Applicants contend that the description of the filtering options described on pp. 10-12 of the specification with reference to FIG. 2 combined with the "product" option depicted in FIG. 2 would have been sufficient to enable one of skill in the art to implement the claimed method wherein searches can be filtered on the basis of products as recited in claim 52. Therefore, withdrawal of this rejection is respectfully requested.

Claim Rejections Under 35 U.S.C. §103

Claims 51 and 52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lash (US 2001/0020229).

For the reasons set forth below, the Lash reference does not teach or suggest at least the following claimed functions:

(a) using the computer software application to assign each subset member a number of intervenability factors representing a total number of the intervenability factors present in the subset member's claim data;

(b) using the computer software application to assign a relative risk ranking to each subset member based upon the subset member's associated relative risk value and the number of intervenability factors assigned to the subset member;

(c) using the computer software application to determine one or more top medical episodes driving risk of each subset member, wherein the top medical episodes are determined by examining the subset member's claim data by diagnosis code or medical episode to determine which of the subset member's medical conditions has the highest associated cost;

(d) displaying (a) a list of the subset members ordered by respective relative risk rankings and (b) the relative risk value for each subset member on an electronic display;

(e) receiving a selection of one or more displayed subset members input into the computer software application by an intervention agent; or

(f) displaying demographic information, a utilization summary, risk factors including behavioral risk factors and self-care characteristics, the intervenability factors, and the one or more top medical episodes for each subset member selected by the intervention agent on the electronic display.

(a) using the computer software application to assign each subset member a number of intervenability factors representing a total number of the intervenability factors present in the subset member's claim data

Lash teaches the calculation of a probability value that represents the probability that a patient will be a high-use patient for a particular disease or condition (e.g., asthma) in the future (e.g., in the upcoming year). This probability value is determined by identifying specific "claim variables" in the patient's claim data and multiplying the values associated with the variables by weighted coefficients. This process is described, for example, in ¶¶25 and 48, but the best example of the process is provided in ¶¶50-54, in which a number of "high relevance claim variables" are identified in the patients' data, the values of the variables are multiplied by their respective coefficients, and then the weighted values of all of the variables are added together to produce a probability value that the patient will be a "high-use" patient as to a specific disease or condition. Table 2 illustrates this process in the context of asthma.

Assuming *arguendo* that the "high relevance claim variables" are comparable to the claimed "intervenability factors," there is no teaching or suggestion in Lash of assigning each subset member a *number of intervenability factors representing the total number of factors present in the member's claim data*. As described above, Lash teaches a calculation in which each variable is treated separately with its own numerical value and weighing coefficient. The numerical value of each variable is multiplied with its weighing coefficient, and the products of each variable and its respective coefficient are summed to obtain a probability value. This process is best depicted in Table 2 of Lash. In contrast to the claimed method, however, Lash does not describe counting the number of variables identified in the patient's claim data (which would be 5 using the data in Table 2) and assigning this number to the respective group member, nor does Lash provide any reason why one of skill in the art would modify the probability

calculation to include determining of that number, which would be meaningless in the Lash probability value calculation.

The Examiner alleges that this function is taught in ¶¶10, 11, 40, 44-45, 49, 50, 55, and 57 of Lash. O.A. at 10. None of these paragraphs, however, describe the claimed functionality of "assign[ing] each subset member a number of intervenability factors representing a total number of the intervenability factors present in the subset member's claim data," nor do they suggest any modification of the Lash probability calculation in which the number of high relevance claim variables is counted and the count assigned to the respective patients. The closest that any of the cited paragraphs comes to this claimed functionality is the description of one of the claim variables that is "the number of emergency room visits by the patient in the past year." Lash ¶10. However, the number of visits is one variable (see Lash Table 2) and does not represent the total number of variables present in the member's claim data as recited in claim 51.

(b) using the computer software application to assign a relative risk ranking to each subset member based upon the subset member's associated relative risk value and the number of intervenability factors assigned to the subset member

In Lash, "the stored program computes probability values for each patient which are indicative of the likelihood that the patient will acquire high service utilization characteristics." Lash ¶7. The Examiner asserts that this probability value for each patient is "a form of" the relative risk <u>value</u> stored for each member. O.A. at 6. The Examiner also asserts that the probability value assigned to each member is "a form of" the relative risk <u>ranking</u> for each member. O.A. at 10. So, according to the Examiner, the Lash probability value for each patient is comparable to both the relative risk value and relative risk ranking in claim 51.

In claim 51, however, the relative risk value and relative risk ranking are two distinct values that serve different functions in the claimed methodology. The relative risk value is stored for each member of the overall group to be analyzed, while the relative risk ranking is .assigned to each member of the subgroup identified for potential intervention based upon two independently derived values: (1) the relative risk value stored for each subgroup member and (2) the assigned number of intervenability factors present in the claim data of each subgroup member. Thus, the probability value calculated in Lash cannot anticipate both the claimed relative risk value and the relative risk ranking.

With regard to the relative risk ranking, the Lash probability value for each member is not "a form of" the claimed ranking because the Lash probability value is not assigned based upon the member's associated relative risk value (which is defined in claim 51 as "a function of predicted future healthcare resource utilization for the member") and the assigned number of intervenability factors (which, as discussed above, the Lash system does not determine). These two values are independently derived and utilized in the present invention; in contrast, they are intermingled in the probability calculation taught in Lash. Thus, Lash does not teach or suggest the use of any value that meets the definition of the claimed relative risk ranking recited in claim 51 and consequently does not anticipate or render obvious the claimed function of assigning a relative risk ranking to each subgroup member.

(c) using the computer software application to determine one or more top medical episodes driving risk of each subset member, wherein the top medical episodes are determined by examining the subset member's claim data by diagnosis code or medical episode to determine which of the subset member's medical conditions has the highest associated cost

The Examiner asserts that the descriptions provided in Lash ¶¶22 and 57 teach "a form of" the claimed identification of one or more top medical episodes. O.A. at 11. The Examiner also cites to FIG. 4 and ¶¶41-42. *Id.*

None of the portions of Lash cited by the Examiner (or any other portions of Lash) teaches or suggests the identification of top medical episodes "by examining the subset member's claim data by diagnostic code or medical episode to determine which of the member's medical conditions has the highest associated cost." FIG. 4 "is a flow chart showing the development of various interventions created for patients likely to become high users" (¶19) and has nothing to do with identification of top medical episodes. ¶22 provides a general description of the multi-variable predictive models for determining probability values, but does not describe the claimed examination of members' claim data by diagnosis code or medical episode to identify each member's highest cost medical conditions. ¶¶41-42 relate to identification of patients for intervention and assignment of interventions for these patients, and have nothing to

do with identification of top medical episodes. ¶57 describes the design of the regression model

used to calculate the probability values by identifying potentially predictive variables:

> In the first step of regression analysis (step 66B of FIG. 3B), a regression
> model is built using all of the potentially predictive variables which have an effect
> on the patient's future likelihood of developing a pattern of high use of the
> services, particularly high-cost occurrences or episodes. Such variables are all
> claims variables (and possibly some demographic variables) suspected of having
> some positive or negative effect on the outcome variable, such as age, number of
> hospital admissions, number of prescriptions filled, occurrences of complications,
> ER visits, etc. The outcome variable, a dependent variable, is the patient's
> frequency of disease-related demands for service in the target year.

As with the other portions of Lash cited by the Examiner, this paragraph does not describe or

suggest the claimed determination of top medical episodes "by examining the subset member's

claim data by diagnostic code or medical episode to determine which of the member's medical

conditions has the highest associated cost."

> Additionally, Lash describes the process illustrated in FIG. 3B as follows:

> FIG. 3B represents a flow chart for a program for the development of a
> model or models. In this arrangement, data is collected and converted into
> electronic form (steps 61B and 62B). This could represent, for example, about 10-
> 20% of the available patient information. ***Then a check is made at step 64B to see
> if the population is relatively homogenous. If it is not, one way of assuring that
> it is relatively homogenous, or at least more so, is by segregating the patient
> population by the disease which has been diagnosed, for example, asthma or
> diabetes (step 65B).*** Then, *for each group of patients, a regression analysis is
> used in step 66B to develop a model for that particular disease*. Once it has been
> determined that the model is relatively accurate, for example, by tracking the
> prediction made by the model versus actual patient service use for a particular
> period of time, it can be stored and implemented in the process of FIG. 3A.

Lash ¶46. Accordingly, each regression model developed using the Lash methodology relates to

a particular disease. This is illustrative of a fundamental difference between the present

invention and the Lash methodology. Lash teaches the development of predictive models on a

disease-by-disease basis, while the present invention enables comparison and analysis of risk

among heterogeneous patient populations having multiple diseases and conditions, any one or

more of which can be high-cost. Examination of each member's claim data to determine which

medical condition(s) are the highest cost is useful where the members may have more than one

disease or condition that is driving their healthcare costs. Such an examination is not meaningful

when all of the group members have the same medical condition that has already been determined to be a high-cost disease or condition, as is the case in Lash. Thus, the claimed function of determining one or more top medical episodes driving risk of each subset member is not taught or suggested in Lash.

(d) displaying (a) a list of the subset members ordered by respective relative risk rankings and (b) the relative risk value for each subset member on an electronic display

For the reasons discussed above, Lash does not teach or suggest the assignment of a relative risk ranking for subset member. Therefore, Lash also does not teach or suggest the function of displaying the subset members by respective relative risk ranking.

Neither of the paragraphs cited by the Examiner (Lash ¶¶37 and 48 (O.A. at 11)) teach or suggest the claimed display functionality. ¶¶37 and 48 instead describe the process of collecting patients' claim records and applying or creating predictive models to the claim data to generate probability scores for the patients. Neither paragraph mentions or suggests the display of any data, much less the specific display recited in claim 51. The only mention of a display in Lash is in ¶¶34-35, in which the use of an outout 52 such as a display coupled to the computer is generally described, and in ¶36 in which "the resultant probabilities for each patient . . . are then provided to output 52 for use by the [managed care company] or the like." No description of the claimed specific display is provided. For this additional reason, Lash does not teach or suggest the claimed display functionality recited in claim 51.

(e) receiving a selection of one or more displayed subset members input into the computer software application by an intervention agent

Neither of the paragraphs cited by the Examiner (Lash ¶¶37 and 48 (O.A. at 11)) teach or suggest the claimed functionality. ¶¶37 and 48 instead describe the process of collecting patients' claim records and applying or creating predictive models to the claim data to generate probability scores for the patients. Neither paragraph mentions or suggests the receipt of a selection of one of more members by an intervention agent. Concerning data inputs, Lash describes the use of "input data compris[ing] a predetermined subset of claims data taken from a larger set of patient claims data" (¶7), the input of patient variables (¶ 11), and a general input

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device 50 (¶¶34-35). There is no teaching or suggestion of receiving a selection of one or more subset members as recited in claim 51. For this reason, Lash does not teach or suggest the claimed receiving functionality.

(f) displaying demographic information, a utilization summary, risk factors including behavioral risk factors and self-care characteristics, the intervenability factors, and the one or more top medical episodes for each subset member selected by the intervention agent on the electronic display.

Lash does not teach or suggest the display of the specific information recited in this portion of claim 51. None of the paragraphs cited by the Examiner (Lash ¶¶22, 36-38, 41-43, 48-50, 55, and 57 plus item 81 in FIG. 4 (O.A. at 12)) teaches or suggests the claimed display of "demographic information, a utilization summary, risk factors including behavioral risk factors and self-care characteristics, the intervenability factors, and the one or more top medical episodes for each subset member selected by the intervention agent." Citations to portions of the Lash publication that may or may not describe the creation or use of data comparable to the claimed display data does not provide a valid basis for the Examiner's assertion that Lash teaches the claimed <u>display</u> functionality.

The only mention of a display in Lash is in ¶¶34-35, in which the use of an output 52 such as a display coupled to the computer is generally described, and in ¶36 in which "the resultant probabilities for each patient . . . are then provided to output 52 for use by the [managed care company] or the like." No description of the claimed display of specific data is provided. Additionally, as discussed above, Lash does not teach or suggest the determination of the top medical episodes, and therefore cannot display the episodes. For this additional reason, Lash does not teach or suggest the claimed display functionality.

Claim 52 depends from claim 51 and is believed to be patentable over Lash for at least the reasons set forth above with respect to claim 51. Additionally, Lash does not teach or suggest the functionality recited in claim 52 wherein the intervention agent may "filter the displayed subset members by zipcode, county, group numbers, products, member ID or member names."

None of the paragraphs cited by the Examiner (Lash ¶¶37, 42-43 or 50 (O.A. at 13)) teaches or suggests the claimed filtering of displayed subset members. Citations to portions of the Lash publication that may or may not describe the creation or use of data comparable to the claimed filter categories does not provide a valid basis for the Examiner's assertion that Lash teaches the claimed display filtering functionality.

The only mention of a display in Lash is in ¶¶34-35, in which the use of an output 52 such as a display coupled to the computer is generally described, and in ¶36 in which "the resultant probabilities for each patient . . . are then provided to output 52 for use by the [managed care company] or the like." No description of the claimed display of specific data is provided. Additionally, as discussed above, Lash does not teach or suggest the determination of the top medical episodes, and therefore cannot display the episodes. For this additional reason, Lash does not teach or suggest the claimed display filtering functionality.

Conclusion

This response is being submitted on or before August 2, 2009, with the required fee for a two-month extension of time, making this a timely response. It is believe that no additional fees are due in connection with this filing. However, the Commissioner is authorized to charge any additional fees, including extension fees or other relief which may be required, or credit any overpayment and notify us of same, to Deposit Account No. 04-1420.

This application now stands in allowable form and reconsideration and allowance is respectfully requested.

Respectfully submitted,

DORSEY & WHITNEY LLP
Customer Number 25763

Date: _July 15, 2009_   By _Adriana Luedke_
                                    Adriana S. Luedke, Reg. No. 41,956
                                    (612) 492-6858